PIISA

Piloting Innovative Insurance Solutions for Adaptation

Enablers and Barriers of Nature-based Solutions: Insights from European insurers

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Summary

Climate-related insurance claims are rising in Europe, while adaptation measures remain insufficient, contributing to an adaptation gap (UNEP, 2025). This report analyses the barriers and enablers to integrating nature-based solutions (NBS) into insurance policies. It draws on interviews with insurers in the Netherlands, complemented by verification and additional insights from insurers in the Boreal and Mediterranean regions. The research is conducted within the European Piloting Innovative Insurance Solutions for Adaptation (PIISA) project.

Many barriers and enablers appear similar across Europe, indicating potential for transferring successful strategies across different contexts. However, insurers generally see limited opportunities to include NBS in their products at this stage. Key barriers include a lack of a clear business case, limited awareness, uncertainty about their role in adaptation, and the costs of structural adjustments to buildings. Strengthening partnerships and improving data and knowledge exchange could support insurers in integrating NBS, particularly through informative and financial instruments.

Two important regional differences were noted: green roofs are more established in the Netherlands due to supportive measures from (local) governments, while in the Boreal and Mediterranean regions, climatic conditions, regulatory challenges, and limited insurance uptake pose additional barriers.

Keywords

Climate adaptation, nature-based solutions, insurance products.

Abbreviations and acronyms

Acronym	Description
NBS	Nature-based solutions
PIISA	Piloting Innovative Insurance Solutions for Adaptation
EU	European Union
CSRD	Corporate Sustainability Reporting Directive
ACM	Authority for Consumers and Markets

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1 Introduction

European insurers are experiencing an increase in claims related to water damage and extreme weather events (EIOPA, 2022; UNEP, 2025). In the Netherlands, approximately 20% of the claims is attributed to climate change impacts (Verbond van Verzekeraars, personal communication, October 2023). Insurers acknowledge the urgent need for climate adaptation strategies (Box 1), and some have taken action by incorporating nature-based solutions (NBS) in their products. For example, in the Netherlands, Interpolis offered homeowners a discount on green roof[1] installations. However, large-scale implementation of adaptation measures remains challenging (UNEP, 2025).

Box 1: Climate adaptation and nature-based solutions

Globally, climate change causes various impacts such as floods, heat stress and droughts. Adjusting our society to these impacts and building resilience is called *climate adaptation.* This differs from *climate mitigation*, which focuses on reducing greenhouse gas emissions. One approach to climate adaptation is known as *nature-based solutions*, which leverages nature and the power of ecosystems to enhance climate resilience (IUCN, n.d.)[2]. Examples are river restoration for flood management, agroforestry, and green roofs.

1.1 The PIISA Project

The Piloting Innovative Insurance Solutions for Adaptation (PIISA) project was established in 2023 to address the adaptation gap outlined in the introduction. Over a three-year study funded by the Horizon Europe programme, twelve organisations from five European countries worked together to co-develop climate-resilient insurance portfolios and solutions for sharing losses and climate risk data. More specifically, PIISA developed new concepts, products and services through piloting in different thematic areas.

This report presents the results from the Green Roof pilot, which focuses on identifying the enablers and barriers to integrating NBS into insurance products for the built environment, with a focus on green roofs. The pilot was structured around three regional loops (Figure 1): the Netherlands (2024), the Boreal region (2025), and the Mediterranean region (2025-2026), with each loop building on the findings of the previous one. This report covers the outcomes of Loop 1, detailing results from the Netherlands, and Loop 2 and 3, which expand on these insights to reflect and build upon them in the Boreal and Mediterranean context.

[1] Green roof refers to a roof consisting of a vegetation layer on top of the substrate layer (Shafique et al., 2018).
[2] In literature, nature-based solutions are often used interchangeably with ecosystem-based adaptation (Pauleit et al., 2017; Cohen-Shacham et al., 2016).

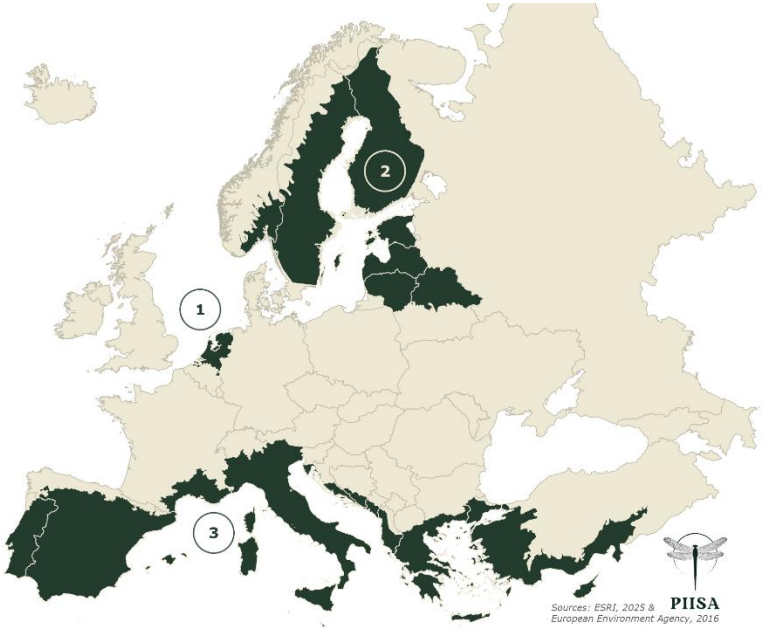

Figure 1: Regional loops of the Green Roof pilot, consisting of (1) The Netherlands, (2) the Boreal region, and (3) the Mediterranean region.

1.2 Method

To identify the enablers of and barriers to NBS in insurance products, a concise desk research and interviews were conducted. The desk research included global studies on examples of NBS in insurance products, with a particular focus on the built environment.

Following the desk research, a set of interview questions was drafted for the interviews in the Netherlands (Annex I), and adjusted for the Boreal and Mediterranean context (Annex II). In 2024, eight insurance companies in the Netherlands were interviewed. These insurers are represented in the Platform on Climate of the Dutch Association of Insurers and all offer property insurance for private homeowners. In 2025-2026, four insurers from the Boreal region and four insurers from the Mediterranean took part in comparable interviews, during which they reflected on and enriched the insights shared by their Dutch counterparts. The interview transcripts were analysed qualitatively to extract key insights, and anonymously compiled into this report.

The report continues in Chapter 2 with background on the impacts of climate change on current insurers' portfolios and risk prevention measures. Chapters 3 and 4 then describe the barriers end enablers of NBS in insurance products, respectively. Chapter 5 concludes with potential ways forward for insurers.

2 Brief introduction to current climate change impacts on insurers' portfolios

Climate change has a significant impact on the built environment (European Environment Agency, 2023). Across Europe, insurers report that heavy rainfall and storms lead to considerable claims within urban areas. Other major contributors vary geographically, including fluvial floods, hail, and wildfires. These developments are reflected in insurance portfolios, where insurers report a modest increase in homeowner claims and a rise in claim frequency.

In the Netherlands, the Dutch Association of Insurers monitors weather-related damages through its Climate Damage Monitor. This monitor has shown an upward trend in building damage caused by rainfall since 2007 (Klimaatschademonitor, 2026). The interviews indicate that insurers expect this trend to continue, anticipating greater future losses due to the increasing probability of climate-related impacts.

Currently, actuaries in insurance companies adjust insurance premiums based on the probability of climate impacts, which are determined by historical hazards. The uncertainty about future risks, the evolving state of the climate and the frequency of extreme events were mentioned as challenging aspects for adjusting premiums in the future. This will ultimately lead to changes in insurability, although the specific direction of these changes is hard to predict.

2.1 Nature-based solutions as risk prevention

The motivation to address the evolving risks of climate-related damages and their insurability may encourage insurers to take action on climate adaptation. Such measures, which are referred to by insurers as risk prevention, are already being implemented and may include NBS. For example, Interpolis, part of the Achmea Group, launched a green roof initiative (Box 2) driven by the ambition to reduce damage compensation claims. Among insurers assessed in the Netherlands, the Boreal region, and the Mediterranean, Interpolis was the only one to offer green roofs as a product until September 2025.

Box 2: Former Interpolis green roof initiative

Interpolis offered green roofs to homeowners to reduce claims related to roof leakages caused by extreme rainfall. Clients could purchase three types of green roofs through the Interpolis website, each emphasising either increased green space, biodiversity, or water storage. Additionally, Interpolis offered free roof inspections to assess roof suitability (Interpolis, n.d.). The website continues to provide detailed information on the benefits of green roofs. In the initial phase, Interpolis offered a 10% discount on the insurance premium to encourage homeowners to install green roofs. However, this discount was discontinued due to its negligible effect on homeowners' motivation, as disclosed in an interview with Interpolis.

Other Dutch insurers also incorporate NBS into their home insurance operations. These include covering sustainable building types, such as green roofs, and offering premium discounts to homeowners who remove a percentage of their garden tiles as part of the Dutch 'NK Tegelwippen' initiative[3] (Klaverblad, 2023). However, this discount was deemed too marginal to effectively motivate homeowners and has since been discontinued by some insurance companies.

In contrast, such NBS initiatives appear to be less common among insurers in the Boreal and Mediterranean regions. Instead, insurers across Europe provide homeowners with climate adaptation tips, such as garden greening and water storage, through their websites and email communications. Other inspiring examples include:

- The Nordic insurer If offers on-site house assessments, where building experts perform a free property health check every four years and offer specific recommendations to reduce climate-related damage (If, n.d.).
- In Greece, insurer Interamerican works together with the local government to share knowledge, strengthen first-aid preparedness, and support research on climate risks and adaptation through its Rebuilding Tomorrow campaign (Interamerican, n.d.).
- The Portuguese insurer Fidelidade has established an Impact Centre for Climate Change, through which it collaborates with scientists, policymakers and civil society to share expertise and research on adaptation (Fidelidade, n.d.).

Interestingly, many insurers interviewed in both regions indicated that they currently see limited potential for integrating NBS into their core insurance products. As one interviewee from the Netherlands put it: "I don't see many opportunities, specifically for NBS. I see more opportunities for NBS on the asset management side[4], less on the insurance side". The next chapters explore the barriers and enablers to incorporating NBS into insurance products.

[3] An initiative that stimulates homeowners to remove garden tiles.
[4] The asset management side refers to the assets in the real estate market.

3 Barriers to nature-based solutions

3.1 Findings from the Netherlands

In the Netherlands, insurers identified four key barriers to integrating NBS into insurance products (see also Table 1):

1. **Absence of a robust business case**
   To offer insurance products that include NBS, a compelling business case must be developed within insurance companies (Platform voor Duurzame Financiering, 2023). Currently, there appears to be limited data on the capacity of NBS to reduce climate-related risk and vulnerability for building assets, particularly at household level (Scholer & Schuermans, 2022). Additional challenges for incorporating NBS in insurance products in the built environment include the small scale of measures and the risk of free rider behaviour[5] (UNEP FI, 2023), which constrain the ambition to develop a business case.

2. **Limited awareness and knowledge of climate risks**
   Interviewees mentioned that both organisational personnel and clients demonstrate limited awareness of climate risks, the urgency of these risks, and the measures to prevent climate impacts. This implies a lack of risk perception and understanding of NBS. To effectively offer NBS in insurance policies, clients need a basic understanding of climate risks (Platform voor Duurzame Financiering, 2023). Moreover, internal support is necessary to integrate climate adaptation into insurance processes and develop such policies.

3. **Siloed, sectoral approach to climate adaptation**
   Insurance companies have been ineffective in collaborating on climate adaptation with other sectors, such as local governments and the construction sector, as disclosed in recent research (Vega, 2023). Initiating cross-sectoral collaboration was described as challenging, thereby limiting the potential to launch new initiatives. Additionally, building trust across sectors and maintaining a streamlined workflow are barriers to effective cross-sectoral partnerships.

4. **Unclear role of insurers in climate adaptation**
   Insurers have shown to be uncertain about the role they have and can play in climate adaptation, despite European Union (EU) regulations such as the Corporate Sustainability Reporting Directive (CSRD) and the EU Taxonomy mandating them to

[5] Free rider behavior refers to a behavior in which an actor aims to benefit from something without contributing towards the cost of its production (Hardin, & Cullity, 2003).

report on climate adaptation (Directive 2022/2464; Directive 2020/852). This uncertainty is largely due to the recent implementation of these policies. Clear guidance and a long-term vision on insurers' roles in climate adaptation are missing, according to the interviewees.

3.2 Reflections from the Boreal and Mediterranean regions

While green roofs are increasingly common in the Netherlands, their uptake is limited in the Boreal and Mediterranean regions. Correspondingly, insurers in these parts of Europe are not actively promoting green roofs or other types of NBS, a trend also observed among Dutch insurers. A key underlying factor is the uncertainty around risk reduction: insurers in all regions emphasise that unless NBS demonstrably reduce risk, there is little incentive to engage with NBS-related products. Additional barriers that were identified by insurers in the Boreal and Mediterranean regions include (Table 1):

5. **Adjusting building structure is costly**
   In the Boreal and Mediterranean regions, insurers noted that the added weight, especially when accounting for rain and snow, can compromise the integrity of buildings not originally designed to support such loads. This perceived risk is heightened by the Boreal region's climate. Moreover, the installation of green roofs can increase property values, potentially leading to higher insurance premiums. The high cost of construction further acts as a deterrent.

6. **Regulation and permissions**
   Insurers in the Boreal region highlighted complex regulatory environments as an obstacle. In Sweden, rebuilding after damage requires municipal approval, which must align with detailed legislative frameworks and general planning considerations. In Finland, strict building codes necessitate resilience to seasonal extremes, making compliance particularly challenging for green roofs. Concerns include water insulation, ventilation, structural weight, fire safety, and roof slope. Unlike the Netherlands, there are no known subsidies for green roofs in these countries, further reducing incentives.

7. **Risk distribution and insurability**
   Issues related to risk allocation and insurability were more explicitly raised by insurers in the Boreal region than Dutch insurers. Insurance typically covers only sudden and unforeseen events, leaving ambiguity about who – municipality, insurers, or property owner – bears responsibility for climate-related damages. For example, if a property owner fails to take climate adaptive measures and weather-related damages occur, the financial burden may fall on the insurer or municipality. However, if preventive measures - such as green roofs - are implemented and later sustain damage due to climate change, it is unclear who is responsible for the costs. While insurance policies could potentially be adapted to cover such risks, questions about installer error or maintenance responsibility complicate claims and accountability. This uncertainty can

make property owners hesitant to invest in such solutions, as they may be left shouldering the risk. This uncertainty can make property owners hesitant to invest in such solutions, as they may be left shouldering the risk. The lack of a clear accountability framework therefore hinders efforts to promote risk prevention measures.

8. Limited home insurance uptake

In the Mediterranean region, insurers highlighted that low levels of home insurance coverage are a key barrier to integrating NBS in insurance products. Where basic insurance uptake is limited, awareness of risk reduction measures tends to be low, and households may be less inclined to invest in preventive adaptations. By contrast, in countries such as the Netherlands, property insurance is widely seen as standard practice, which provides a stronger basis for promoting additional NBS measures.

9. Wildfire susceptibility

Mediterranean insurers also pointed to concerns around wildfire risk as a barrier to promoting green roofs. Rooftop vegetation can increase the vulnerability of buildings in fire-prone areas. As a result, covering green roofs under standard home insurance may lead to higher premiums due to the perceived increase in fire risk. In addition, extreme summer heat can make rooftop vegetation difficult to maintain, raising upkeep needs and limiting the long-term viability of green roofs.

	Netherlands	Boreal region	Mediterranean
1. Absence of a robust business case	■	■	■
2. Limited awareness and knowledge of climate risks	■	■	■
3. Siloed, sectoral approach to climate adaptation	■		
4. Unclear role of insurers in climate adaptation	■	■	
5. Adjusting the building structure is costly		■	■
6. Regulatory hurdles related to permissions		■	
7. Risk distribution and insurability		■	
8. Limited home insurance uptake			■
9. Wildfire susceptibility			■

Table 1: Barriers to integrating nature-based solutions into insurance products in Europe.

4 Enablers to nature-based solutions

4.1 Findings from the Netherlands

Despite existing barriers, Dutch insurers also identified potential enablers for including NBS into insurance policies (see also Table 2):

1. **Differentiating insurance premiums**
   Differentiating insurance premiums for building assets can incentivise homeowners to reduce their risk exposure and adopt NBS, similar to strategies used to reduce flood damages (Botzen, & van den Bergh, 2008; Platform voor Duurzame Financiering, 2023). Such differentiation could include offering a discount in premium for homeowners who adopt NBS, or a premium rise for those who do not adopt NBS. However, insurers are reluctant to deem this effective for the built environment due to the relatively low premiums. This likely results in discounts too marginal to motivate homeowners to purchase these insurance policies.

2. **Information infrastructure on prevention**
   Many Dutch insurance companies have included sections on climate adaptation into their websites and insurance policies. Through these information resources, insurers provide clients with insights into actions they can take to prevent risks and damages. Examples of this information infrastructure include tips, blogs, and videos on topics such as greening gardens, lifestyle adjustments, and green roofs. Such endorsements can encourage homeowners to invest in NBS, especially when integrated into insurance policies (Kelso et al., 2024).

3. **Build Back Better approach**
   Insurers can incentivise homeowners to implement NBS during damage repairs, a strategy known as the *Build Back Better* approach (Marchal et al., 2019). When integrated into regulations, insurance policies can offer discounts on NBS repairs, potentially motivating homeowners to adapt their buildings to a changing climate (Kelso et al., 2024). To incorporate this into Dutch insurance policies, it is important to establish cross-sector collaboration, develop comprehensive plans (Jarzabkowski et al., 2019), and identify innovations permitted by Dutch regulations.

4. Adjusting insurance policy coverage

Enhancing insurance coverage tailored to NBS could incentivise homeowners to adopt these solutions (Kelso et al., 2024). Such enhancements might include broader coverage for NBS or more limited coverage for traditional 'hard materials' or not NBS options. The policy adjustments could also be part of the Build Back Better approach, particularly given the low public awareness of insurance policies.

4.2 Reflections from the Boreal and Mediterranean regions

Some of the enablers mentioned by insurers in the Boreal and Mediterranean regions align with findings from the Netherlands, although some differences emerged. Two main enablers are highlighted: the first elaborates on Dutch insights, while the second emerged as a new enabler (see also Table 2):

Ad 1. Differentiating insurance premiums

Insurers stressed that for green roofs to gain traction, they must demonstrably reduce risk and lead to tangible economic benefits. A primary incentive would be offering lower premiums, not only for the property with the green roof but potentially across the policyholder's entire insurance portfolio. This approach goes beyond the Dutch takeaways, where insurers only mentioned premium differentiation for the insured property itself, without considering discounts across the broader insurance portfolio. Once green roofs are well established as climate risk reduction assets on household level, insurers are more likely to promote this offering premium reductions.

5. Public-private collaboration

Insurers underlined the importance of collaborating with other parties, including local governments and the construction sector, to support green roofs uptake. This includes co-funding through subsidies, co-marketing campaigns, and helping customers identify trustworthy contractors (even for services the insurer does not cover), thereby building trust. A new insight, not mentioned by Dutch insurers, is the potential role of insurers in covering financial risks linked to NBS. For example, insurers could step in if a green roof underperforms or fails to deliver expected roof structure protection benefits, thus reducing uncertainty and encouraging uptake among property owners and developers.

	Netherlands	Boreal region	Mediterranean
1. Differentiating insurance premiums			
2. Information infrastructure on prevention			
3. Build Back Better approach			
4. Adjusting insurance policy coverage			
5. Public-private collaboration			

Table 2: Enablers to integrating nature-based solutions into insurance products in Europe.

5 The way forward: Incentives

5.1 Findings from the Netherlands

Taking into account the barriers and enablers to integrating NBS into insurance products, insurers identified a range of interventions and services that could incentivise the adoption of NBS. For Dutch insurers, the path forward centres on six key interventions (see also Table 4):

1. **Exchanging best practices**
   Insurers emphasised the value of best practices for integrating NBS into insurance products as a starting point for climate adaptation. Best practices can guide the establishment of industry standards for climate adaptation (UNEP FI, 2023). However, insurers currently have limited access to the existing best practices, for example those available internationally.

2. **Developing climate adaptation labels**
   Insurers highlighted the importance of assessing the climate resilience of buildings, albeit acknowledging the time-consuming nature of this process. Such assessments are deemed necessary to enhance NBS and climate adaptation in the built environment. Implementing a standardised procedure, such as a mandatory climate adaptation label for buildings, could assist insurance companies in this process (Platform voor Duurzame Financiering, 2023). Climate labels have the potential to facilitate the inclusion of NBS in insurance policies, for example through premium differentiation and the Build Back Better approach. Moreover, climate labels can incentivise homeowners to undertake climate adaptation measures, as is being researched in the case of water labels (Box 3) (Platform voor Duurzame Financiering, 2023).

   Box 3: Pilot on Water Label for buildings in the Netherlands
   In 2023, Deltares started a pilot study to explore the feasibility of a water label for Dutch buildings on behalf of the Dutch Ministry for Infrastructure and Water (Hoogvliet et al., 2023). The water label aims to raise awareness about floods (both pluvial and fluvial) risks among Dutch citizens. While this initiative is currently in its pilot phase and further research is needed, its findings could be instrumental in studying opportunities for establishing a climate adaptation label (Oerlemans et al., 2024).

3. **Data on nature-based solutions and risk reduction**
   Addressing the barrier of the absence of a clear business case for NBS in insurance products requires more comprehensive data on the effectiveness of NBS in risk reduction. This also applies to more detailed data on climate risks in the built

environment and on household level. Furthermore, attention must be paid to the data quality and the spatial scale of the collected data (Platform voor Duurzame Financiering, 2023).

4. Creating internal and external awareness

In recent years, insurance companies have enhanced their information infrastructure on climate adaptation. Beyond providing content on their websites, the interviewed insurers mentioned they offer information and advice during policy consultations, damage claims processing, and insurance premium acquisition. One example is BlueLabel, a tool created to give homeowners insights into the impact of climate change on their neighbourhood (BlueLabel, n.d.). Continuously updating this information can foster awareness among clients. Internally, insurance company personnel could be educated on themes such as climate adaptation and NBS. This approach integrates climate adaptation into the organisation, thereby facilitating endeavours to offer NBS in insurance products.

5. Establishing a long-term vision

Defining the role of insurers in climate adaptation necessitates the development of a long-term vision for insurance companies regarding climate adaptation. Such a vision can also be jointly formulated with other insurance companies, potentially through the sector association (e.g. Verbond van Verzekeraars). Incorporating Key Performance Indicators (KPIs) into the vision can facilitate monitoring of climate adaptation efforts, thereby fostering further advancement of the climate resilience of insurance companies.

6. Collaborating with key stakeholders

Insurance companies commonly engage in collaborations with external entities to enhance their insurance policies. One prevalent example is the collaboration between insurance companies, police and fire services on issues as burglary and fire prevention. Key stakeholders crucial for advancing the potential of NBS in the built environment encompass (local) governments, the wider financial sector, businesses, scientific institutions, and environmental organisations (UNEP FI, 2023; OECD, 2023). Table 3 outlines the collaborations mentioned in the interviews.

Collaborative party	Explanation
Verbond van Verzekeraars	• Currently, Dutch insurers collaborate within Verbond van Verzekeraars, the Dutch sector association, to exchange knowledge on climate adaptation. • Due to challenges posted by the Netherlands Authority for Consumers and Market's (ACM) rulings, joint research or pilot projects are difficult to initiate. Therefore, knowledge exchange remains the primary focus.

Research institutes	• Many Dutch insurers collaborate with research institutes (e.g., IVM, TU Delft) to acquire data or assess the effects of pilot projects. • Such collaborations have proven valuable in developing best practices and ensuring effective integration of climate adaptation across the sector (UNEP FI, 2023).
Local governments	• Collaboration with local governments can stimulate data exchange on climate risks, NBS interventions, and associated costs (Vega, 2023). This collaboration was exemplified in the Interpolis green roof initiative with the city of Tilburg.
Construction sector	• Collaborating with the construction sector on damage repair can potentially reduce uncertainty regarding repair costs, particularly within the framework of the Build Back Better approach.

Table 3: Types of collaboration referred to in interviews as a way forward for NBS in insurance products.

5.2 Reflections from the Boreal and Mediterranean regions

Most of the incentives identified in the Netherlands are familiar to insurers in the Boreal and Mediterranean region. However, three critical points were stressed again:

Ad 1. While enhanced collaboration and data sharing on climate risks and adaptation measures would be beneficial, insurers noted that competition laws prevent information exchange between insurance companies, thus hindering the sharing of knowledge and data.

Ad 2. The development of climate adaptation labels for rebuilt or renovated houses is perceived as a promising option, though still in its infancy. Building on this, insurers proposed the development of renovation standards specifically aimed at reducing future climate-related damages.

Ad 3. As Dutch insurers also highlighted, access to household-level data on climate risks and on the risk-reducing effects of NBS is key, and is still to be established.

In addition, two new incentives were mentioned by Mediterranean insurers (Table 4):

7. **Governmental support**

   Insurers noted that many of the benefits of NBS are shared across society, rather than captured directly through lower insurance losses. For that reason, they point out that public incentives and supportive regulation is essential to make these solutions viable and sustainable at scale. Without a clear policy framework, promoting adaptation measures can be difficult and expensive for insurers to do on their own. In addition, some insurers pointed out that compliance requirements can limit how they communicate with clients, since promoting NBS initiatives without an official framework may expose them to accusations of greenwashing.

8. **Green roof standards**

   There is a need for clear minimum standards for green roofs to help manage risks and build confidence in their performance. This includes requirements for proper water isolation, the use of plant types appropriate for local weather conditions, and consistent

construction quality. Establishing common standards would help ensure that green roofs deliver the benefits, while also supporting insurers' interest in reducing damage and claims.

	Netherlands	Boreal region	Mediterranean
1. Exchanging best practices			
2. Developing climate adaptation labels			
3. Data on nature-based solutions and risk reduction			
4. Creating internal and external awareness			
5. Establishing a long-term vision			
6. Collaborating with key stakeholders			
7. Governmental support			
8. Green roof standards			

Table 4: Incentives for integrating nature-based solutions into insurance products in Europe.

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6 Key takeaways and follow-up

In Europe, insurers are experiencing an increase in climate-related claims, while adaptation interventions are lagging, leading to an adaptation gap (UNEP, 2025). This report explains the barriers and enablers to integrating NBS into insurance policies, identified by insurers in the Netherlands, the Boreal region, and the Mediterranean (Annex III).

The key takeaways for insurers, with relevance beyond the insurance sector, are:

- Several barriers and enablers identified appear consistent across all regions. This suggests there may be potential for replicating successful NBS adaptation strategies between different climatic contexts.
- Insurers generally report limited scope for incorporating NBS into their product offerings. The main obstacles include a lack of a clearly defined business case, limited awareness about climate risks and NBS, ongoing uncertainty regarding the role of insurers in climate adaptation, and the costs of adjusting the building structure.
- As insurance companies become more engaged in climate adaptation and risk prevention, stronger partnerships, better data and knowledge exchange, and higher awareness could help overcome barriers to integrating NBS into insurance solutions. In this context, insurers see strong potential in using both informative and financial instruments to support uptake.
- Two significant regional differences across Europe were identified:
    1. The prevalence of green roofs: Green roofs are more commonly integrated into the urban landscape in the Netherlands than in the Boreal and Mediterranean regions. Also, early efforts to support them, through subsidies, partnerships, and regulations, are somewhat more developed in the Netherlands than in the other regions.
    2. Location-specific factors: In the Boreal and Mediterranean regions, several local conditions limit the uptake of green roofs in ways that are less relevant or absent in the Netherlands. In the Boreal region, building features must account for climatic conditions and regulatory hurdles are more pronounced due to zoning plans and a lack of subsidies. In the Mediterranean, uptake is constrained by concerns about wildfire susceptibility, the difficulty of maintaining rooftop vegetation during extreme summer heat, and limited home insurance uptake.

Building on the findings of this study, the PIISA project has developed a dedicated website aimed at increasing awareness among insurers about climate-related risks and the potential role of NBS in risk reduction. The platform provides accessible information on climate impacts and showcases practical examples. By facilitating knowledge exchange and improving understanding of climate risks and adaptation options, the website seeks to support and inspire insurers in overcoming identified barriers and exploring opportunities for incorporating NBS into their products and services.

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Annex I: Interview questions for Dutch insurers

1) Climate change & insurers

- In what way does climate change impact your organisation's portfolio?
- In what way do your insurance products take into account the increase of extreme weather events? Does this differ between clients?
- What types of extreme weather phenomena are most interesting to your organisation from an insurability perspective? Why?

2) Nature-based solutions in insurance products

- Are you currently offering any NBS within your products? If so, how? How does this differ between clients?
- To what extent are you familiar with NBS insurance products of other insurance companies? Are you familiar with Interpolis' green roof initiative? What opportunities and obstacles do you envisage for this initiative?
- What potential do you see for including NBS in your product range? How does this differ between clients?
- In relation to your clients, what barriers exist to offer NBS in your products? How does this differ between your clients?
- What changes are needed to offer NBS in your products? How does this differ between your clients? To what extent does competition play a role in this?
- To what extent could insights into the business model and cost-benefit results be an incentive for you to bet on NBS?
- Which (inter)national regulations incentivise you to provide NBS to your clients? How?
- What services, insights or interventions could be of use in offering NBS products?

3) Nature-based solutions within the organisation of insurance companies

- What potential do you see for including NBS within the organisation?
- What barriers exist to act on NBS within your organisation?
- Which KPIs exist or should be developed to act on NBS within your organisation?
- Which changes or insights are needed within your organisation for stimulating NBS?

4) Possibilities of collaboration and next steps

- Are you investing in your own (or joint) knowledge development on climate risks, climate adaptation or NBS?
- How could insurance companies collaborate to stimulate NBS?
- What collaboration with external entities (e.g., climate service providers) is needed to stimulate NBS?
- To what extent do subsidies play a role in deploying NBS?
- What products or services could be of use in stimulating NBS?
- What would you like us to include in our research?

Annex II: Interview questions for insurers in the Boreal and Mediterranean regions

1) Current Policies / Solutions

- What insurance products and solutions, related to green roofs or NBS, or green roofs specifically, are you currently offering?
- Are there any specific initiatives or campaigns your company is running implementing to address climate change?

2) Benefits of Green Roofs

- What benefits do you see in promoting green roofs or other NBS in cities, particularly in the region you are active in?
- How could your company benefit from more green roofs and closely related solutions being adopted by homeowners?

3) Barriers to Green Roof Insurance

- What are the main barriers or challenges your company faces when trying to offer green roof or NBS insurance products? E.g. regulatory, financial, or logistical limitations.
- How do you think these barriers could be addressed?

4) Opportunities and enablers

- What opportunities do you see for green roofs or NBS insurance products in the homeowners' insurance market?

5) Knowledge Gaps and Research Needs

- What knowledge gaps do you think exist within your company regarding green roofs, NBS, or climate adaptation?
- What kind of research, climate services, or expertise or even data that would be most useful to help your company and the market move forward with these solutions?

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Annex III: Barriers, enablers and incentives of nature-based solution insurance products for insurers in the Netherlands, the Boreal region, and the Mediterranean

		Netherlands	Boreal region	Mediterranean
Barriers	1. Absence of a robust business case	■	■	■
	2. Limited awareness and knowledge of climate risks	■	■	■
	3. Siloed, sectoral approach to climate adaptation	■		
	4. Unclear role of insurers in climate adaptation	■	■	
	5. Adjusting the building structure is costly		■	■
	6. Regulatory hurdles related to permissions		■	
	7. Risk distribution and insurability		■	
	8. Limited home insurance uptake			■
	9. Wildfire susceptibility			■
Enablers	1. Differentiating insurance premiums	■	■	■
	2. Information infrastructure on prevention	■	■	■
	3. Build Back Better approach	■	■	
	4. Adjusting insurance policy coverage	■		
	5. Public-private collaboration		■	■
Incentives	1. Exchanging best practices	■	■	■
	2. Developing climate adaptation labels	■	■	■
	3. Data on nature-based solutions and risk reduction	■	■	■
	4. Creating internal and external awareness	■	■	■
	5. Establishing a long-term vision	■		
	6. Collaborating with key stakeholders	■	■	■
	7. Governmental support			■
	8. Green roof standards			■

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